

A PRELIMINARY SURVEY ON SELECTED MINERALS OF SRI LANKA

CSC Fonseka*, KSU Kumara, SL Madunil and AM Hafil

Department of Physical Sciences, Faculty of Applied Sciences, Rajarata University of Sri Lanka, Mihintale.

[*fsarala@yahoo.com](mailto:fsarala@yahoo.com)

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INTRODUCTION

The island of Sri Lanka is located at the southernmost tip of the Indian sub continent. According to Dissanayake (2000) Sri Lanka consists of mostly Precambrian metamorphic rocks, except northwestern narrow coastal belt which is underlain by Miocene limestones and calcareous sandstones.

According to Schumann (1994) Sri Lanka is known for valuable minerals such as dolomite, apatite, limestones, mica, graphite, limonite etc. to precious stones such as sapphire, moonstones, beryl etc.

Perkins (2002) describes minerals are valuable natural resources and are unique and non-renewable. They represent vital raw materials for many basic industries and are a major resource for the development of the country.

Kuo (2010) states that Sri Lanka has reasonable endowments of mineral resources in relation to its small area of only 65,610 km² such as Graphite(C), Dolomite[CaMg(CO₃)₂], Mica, Apatite[Ca₅(PO₄)₃(F,Cl,OH)], etc. These mineral resources produce cement, glass, ceramics, fertilizer, gems and jewellery and nonmetallic mineral products.

In our study, we have chosen about 30 minerals which are found in Sri Lanka and collected the information of their chemical composition, chemical structure, physical properties, chemical properties and their present and possible future applications.

The selected minerals for this survey are Graphite(C), Crystalline limestone, Silica sands [Rutile(TiO₂), Ilmenite, Garnet, Zircon, Peat, Iron Ore- Magnetite, Iron Ore- Limonite, Clay (Ball clay, Kaolin, Brick and tile clay), Mica, Quartz[(SiO₂)(Smokey quartz, Milky quartz, Rose quartz, Amethyst)], Feldspar, Serpentinite, Magnesite, Apatite[Ca₅(PO₄)₃(F,Cl,OH)], Thorianite, Ornamental

stones (Chertz, Opal, Agate, Chalcedony), Calcite(CaCO_3), Fluorite(CaF_2), Dolomite[$\text{CaMg}(\text{CO}_3)_2$], Gem stones, Marble, Hematite(Fe_2O_3), Corals, Uraninite, Monozite, and Granite.

The identification of the mineral is essential for the people and relevant authorities in order to utilize the mineral effectively and efficiently. Therefore, the primary ambition of doing this survey based on minerals is to illustrate diversity of the geology and mineral resources of Sri Lanka. It serves as a teaching resource for university students and school children as well as for general public who are interested in the field of mineral deposits in Sri Lanka.

METHODOLOGY

Materials:

- Sample containers (glass)
- 03 numbers 2.44x1.22 m² cupboards
- Stationeries
- photo guides
- tool box used to check physical properties

Methods:

The present situation of mineral resources in Sri Lanka was studied by referring to previous articles and books published by various authors. The details such as chemical composition, chemical structure, physical properties, chemical properties and their uses were searched by following various text books.

The map published by Geological Survey and Mines Bureau was referred and the locations of mineral deposits were identified.

The selected minerals were collected from their locations and they were identified by using various photo guides, experts and using the tool box which is used to identify the physical properties of minerals.

The collected samples have been displayed along with the details unique to the mineral at an easily accessible place at the Faculty of Applied Sciences of Rajarata University of Sri Lanka.

RESULTS AND DISCUSSION

In this study, about 30 minerals were considered and collected. Graphite is one such mineral we have studied out of 30 minerals.

Graphite C

Easily recognized by its greasy feel, colour, softness and foliated nature.

Table 1: Physical properties of graphite.

Physical properties	
Hardness	1-2
Luster	sub metallic/opaque
Colour	lead gray and black
Streak	black

Individual crystals are hexagonal. Foliated and scaly masses are common. The structure is composed of stacked planes of covalently bonded C atoms arranged in a hexagonal pattern. Graphite is essentially pure carbon.

Although Sri Lanka is endowed with high quality graphite mines at Bogala, Kahatagaha- Kolongaha and Ragedara areas, no graphite based industry has been established in the island. Graphite is only exported as a raw material. Possible industrial applications for graphite in the country include the manufacture of brake linings, foundries, lubricants, pencils, carbon brushes and batteries.

CONCLUSION

In this study, 30 minerals which are found in Sri Lanka were collected and the information of their chemical composition, chemical structure, physical properties, chemical properties, and their present and possible future applications were studied.

Although Sri Lanka is widely distributed with a large variety of industrial mineral resources in varying abundance all over the country, still few research and studies have been carried out. Therefore, it is essential to collect information about the other mineral resources also in Sri Lanka. Not only that, some mineral resources are diminishing rapidly. Therefore, it is necessary to have maximum usage of them for a developing country like Sri Lanka.