

Identification each mineral of mineral mixture in Sri Lankan mineral ore using Differential Thermal Analysis data.

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Proposed Research Topic:

Identification each mineral of mineral mixture in Sri Lankan mineral ore using Differential Thermal Analysis data.

Introduction:

There are many mineral sources in Sri Lanka. Those minerals contribute at a certain level to the economic development in this country. There are some mineral factories established in Sri Lanka by using those mineral ores.

But there are some problems at the purification process of mineral ores. Because one or more minerals are bounded together as a mixture or by making complexes. This caused to reduce the quality of the final product. So there should be a perfect procedure to extract pure minerals as much as possible.

Key Words:

Differential Thermal Analysis (DTA), Mineral,

Background:

Mineral depositions are built in the soil due to climatic changes and other natural processes such as earth quake, Volcanoes, Land slip and also with the time passed other minerals are deposited on each ore. The final result is the origin of a complex mixture of minerals.

Each mineral in those complexes. Mixture is not interacted chemically. But it is difficult to purify each one. Because we can't assume which mineral is present in there. Sometime this mixture appears in one colour due to the colour of the major mineral can suppress the other mineral amount. Minerals usually the ore show the colour of mineral which have high colour intensity. As the example physical appearance of the mixture of Dolomite and Quartz and Marble are almost same. But here colour is shown by Dolomite. Because Quartz and Marble have low colour intensity. So it is a much difficult task to separate each mineral.

If there is a method to identify each element early the complexity of separation of mixture. Can be reduced this problem also much common in Sri Lanka.

Identify each mineral from mineral mixture using DTA data. Currently Sri Lanka used classical method. Because new machines are more expensive.

(minerals crush pass through differential magnetic field about 0.2T-4.0T then product passed into water tank and centrifuge well.(mass gravity method) we can use DTA Method to identify the natural minerals in Sri Lanka.)

In here I wish to investigate the success of Differential Thermal Analysis data to identify each mineral from mineral mixture.

Purposes:

- ❖ Collect Mineral several types of minerals used for producing goods and export process
- ❖ 100% pure mineral will be separated out form those minerals.
- ❖ Thermal Analysis (DTA) of that pure mineral supplst
- ❖ Data tabulated and computerized.

Method:

Mineral are used to produce gwds and export them and that minerals can contain several other composition.

In my research project. I am going to get to gather such a pure minerals from various areas from Sri Lanka, and DTA thermographs will obtain.

That DTA thermographs and data will store through visual Basic programme.

Eg: (ΔT , x, peak range, Top peak)

Then, according to their temperature range type of mineral will be tabulated.

Timetable:

First year

Select type of minerals , which minerals are used to study

First three months => collect some mineral sands(zircon, ilmanite , rutile etc)

Next five months => study DTA machine ,how use for get readings and repair the DTA machine.

Study how analysis DTA graph.

Last four months => collect some mineral soil and mineral rocks (Dolomite, clays, etc.)

Second year

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take DTA readings for collected veries mineral types,

first five months => get readings to collections minerals. enter the data into computer and data table.

Last seven months=> Dissemination of project output

Limitations:

it is to be supposed to collect solid minerals from different areas in Sri Lanka. From the costal area, minerals, clay can be collected and it is impossible to collect high cost gem minerals. So therefore high cost gem minerals are not subjected to thermal analysis.

Delimitations:

- ✚ Some amount of mineral item gathered from nearest places in university. Among mineral sample choice pure sample and experimented with DTA. In this case considered about readings and tbelized. Do not consider about high cost mineral. Ti allowed to continue further experiment.

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