

## Preparation of Exfoliated Mica using Phlogophite

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Mica is a generic term for long group of poly-silicates mineral with a unique structure. Mica can be found in nature in the form of sheets connected together by surface force between by layers. Mica has often been used for a wide variety of economical uses including the electronic industry, paints and fillers. The expansion behavior of the natural mica has been studied for industrial use of exfoliated mica. The development of exfoliated mica technology was initiated with a two prolonged approach namely to develop cheaper value added products. Natural mica (Phlogophite) acquired from Feldspar mine at Rattota, Matale, Sri Lanka. The selected mica samples were washed and crushed by using an agate mortar and separated for few minutes to the particle size of 63 $\mu$ m and approximately separated in to 1-2mm particle size by using a mechanical sieve-shaker. Lithium Nitrate was used for chemical intercalation with mica. The expansion factor (degree of expansion) was determined using the ratio between original volume and maximum volume which was measured.

Characterization of the exfoliated mica was carried out with X-ray powder diffractometry (Cu K $\alpha$ , Philips X-Ray generator) and The SEM studies are performed on a JSM 6400 scanning electron microscope. Thickness of the intercalate layers, interplanar distances were studied using *001* diffraction pattern. The exfoliation behavior of the natural graphite mainly depends on the particle size & shape and experimental conditions such as temperature and further it depends on the order of the crystal lattice, the secondary structure; size and shape of the particles, the amount of gangue minerals with the mica and the technological pretreatment of the mica.

**Keywords:** Natural mica; Exfoliation; Phlogophite