Study of effect of structural varieties of Sri Lankan vein graphite onsynthesis and properties of graphene oxide.

A dissertation submitted to the

Faculty of Science & Technology

Uva Wellassa University

In partial fulfillment of the requirements for the award of the

Degree of Bachelor of Science

by

GIDDAWA GEDARA AMILA PRIYANKARA WEERASINGHE

Mineral Resources and Technology Degree Program

Uva Wellassa University, Sri Lanka

2014

Abstract

Sri Lanka is a rich country with graphite. Basically two types of graphite exist in Sri lankan graphite deposits namely vein graphite and flakes graphite. In terms of relative amount and the purity, these two types shows a considerable difference. The amount of the vein graphite is much higher than that of the flakes graphite. Purity of vein graphite is around 99% whereas the purity of flakes graphite is around 60%.

Basically graphite mining is carried out at bagala and Kahatagaha mines. Those are the only operational graphite deposits being mined in Srilanka currently. Eventhough the purity level of the vein graphite is much higher, less attempts have been made to develop this graphite for new applications. Srilanka is renown as a graphite exporter as the row form. Only naturally pure graphite is extracted, crushed and exported to other countries without getting the real use of it though we have a huge potential to do something new with them.

Making graphene out of natural vein graphite is such new technological approach that can be made with the development of technology. Graphene is a one atom thick layer of carbon arranged in a honeycomb lattice that forms flakes of graphite when stacked together. graphene has a unique set of properties that show potential to be used in a wide range of applications such as transistors, high-sensitivity sensors, transparent conductive films for touch screen displays, more efficient solar cells and electrodes in energy storage devices.

Though there are many proposed mechanisms for making graphene, the most efficient method is used in this research which is Improved hummers method. This method is used for all the structural varieties of vein graphite and the behaviors of graphene obtained from each variety is analyzed using FTIR analysys, XRD analysis.Further more electrical conductivity is also analyzed.

Key words – Vein graphite, Graphite Oxide ,Graphene, Nano technology