

## Characterisation of “*Dummala*” Origin in Sri Lanka by XRF, XRD and FTIR

H.C.S. Subasinghe, T.G.T.A. Bandara, W.A.P.P. Christopher, H.P.T. Sasanka  
Hewathilake and H.M.J.C. Pitawala

*Department of Science and Technology, Uva Wellassa University, Badulla, Sri Lanka*

The term *Dummala* is a traditional name given to the naturally occurring substance that can be found, either at uppermost crustal levels, mostly under the freshwater swampy areas or as a dried resin like gums from the *Dummala* tree (*Shorea oblongifolia*), which is endemic to Sri Lanka. The history of *Dummala* is dated back to more than 2000 years, where it was used in ayurvedic medication and to make flares in exorcisms and processions. *Dummala* which is taken out from ground, physically appears as peat-like carbonaceous matter with agglomerated coarse-grained particles. Though, this variety of *Dummala* is naturally occurring material found in Sri Lanka a firm scientific analysis has not yet been conducted. Therefore, this study aims to characterise the *Dummala* extracted from the ground, in order to investigate the chemical composition and special properties that might be suitable for the advanced applications. Initially, natural *Dummala* was dried and 50 g of sample (<53 µm) was obtained by mechanical sieving. X-Ray Fluorescence (XRF) spectroscopic analysis were conducted to identify the chemical composition. Further, *Dummala* was characterised with X-Ray Diffraction (XRD) analysis for the phase identification and the results showed that this material is partially crystalline. XRF data together with XRD analysis confirmed that *Dummala* which is taken out from the ground is composed mainly with Magnesium Carbonate, Silica and Sulphur. Further, the present study suggests a carbon content analysis in order to interpret the origin of *Dummala*.

**Keywords:** *Dummala*, Magnesium, Silica