

**A non-destructive multi-element analytical procedure to determine elemental concentrations in plant material by X-ray fluorescence (XRF) technique**

To determine element concentrations in plant material the samples the sample is first digested using conventional analytical methods. An analytical method is described to analyze the plant material without digesting the sample but pulverizing the sample into a fine powder and making a pellet. The plant material is first oven dried at 40 °C overnight and pulverized to obtain a fine homogenous powder by using an agate ball-mill. Then a small portion (100-150 mg) of the finely powdered sample is pressed into pellets using a pelletizer. The diameter of a pellet was 1.72 cm and the mass density of the pellets was about 40 mg/cm<sup>3</sup>. The pellets of intermediate thickness were analysed by X-ray fluorescence spectrometry with emission transmission arrangement. The pellet is then measured X-ray fluorescence technique employing the Mo secondary target mode. Resulting X-ray spectra were analyzed by AXIL (Analysis of X-ray spectra by Iterative Least square method) software package to obtain characteristic X-ray intensities corresponding to the analyte elements. The calibration of spectrometer was performed using pellets of intermediate thickness prepared from pure chemical compounds. Intermediate thickness pellets of the reference materials. IAEA V-10, HAY (Powder) and

CL -1 Cabbage leaves, were prepared and measured for the validation of the method. Three plant materials [*Centella asiatica* – *Imomea aquatica* (*Kankun*) and *Alternanthera sessilis*, (*Mukunuwanna*)] were analyzed as unknown samples and the results are reported.