MARK WAINWRIGHT ANALYTICAL CENTRE UNSW

XRF FACILITY

METHODOLOGY:

PREPARATION of PRESSED PELLETS for TRACE ELEMENT ANALYSIS:

40mm pressed pellets are prepared using the following weights, weighed out into a plastic container**:

1. 10.0000 grams of finely powdered* and dried sample
2. 1.0000 grams of ceridust (wax) binder

*It is important to choose the correct grinding vessel as samples can be contaminated by the mill. Generally a tungsten carbide (WC) mill is used for routine work. Main contaminants are Co and W.

**These weights are typical but ratios are program dependent; some calibrations require different ratios.

The sample and wax binder are thoroughly mixed. The mixture is then transferred to the pellet die set in which an aluminum cap has been placed. A pressure of ~ 20 tonnes is applied using an ESSA hydraulic press to make the pellet. Samples are labeled on the Al cap and ready to be measured on the XRF spectrometer.

Prepared pellets are typically measured on either the PW2400 WDXRF Spectrometer or the Axios Advanced WDXRF Spectrometer. The appropriate analytical program is selected, which has been calibrated using certified reference materials and using optimal instrumental operating conditions (e.g. choice of crystal, counting times, line overlaps, background measurement and so on). An in-house secondary control is used to ascertain machine performance and drift monitors are run daily. All elements analysed are expressed as ppm element.

Instrumentation:

PanAlytical PW2400 WDXRF, end window Rh tube, 3 kW

PanAlytical Axios Advanced WDXRF, end window Rh tube, 4 kW