



PROCEDURE FOR XRF TECHNIQUE

1. Crushing of each sample with an electric crusher and then pulverized for 60 seconds using Herzog Gyro-mill (Simatic C7-621).
2. Pellets were prepared from the pulverized sample, first by grinding 20g of each sample with 0.4g of stearic acid for 60 seconds. After each grinding, the Gyro-mill was cleansed to avoid contamination.
3. 1g of stearic acid was weighed into an aluminum cup to act as binding agent and the cup was subsequently filled with the sample to the level point.
4. The cup then taken to Herzong pelletizing equipment when it was passed at a pressure of 200KN for 60 seconds.
5. The 2mm pellets were added into a sample holder of the x-ray equipment (Phillips PW-1800) for analysis.

REVIEW OF X-RAY FLUORESCENCE

This method operates on the principle of atomic physics and quantum chemistry. The specimens were exposed to the entire spectrum of photons consisting of primary radiations emitted from a standard X-ray tube. These irradiated specimen causing the elements in it to emit secondary fluorescence with their characteritics X-ray line spectra.

The energies and intensities of the emitted lines were determined by the detection system. This is made up of two units; the primary channel simultaneous wavelength dispersive spectrometer and the personal computer for control and data processing. The rapid detection system employs pre-positioned (analyzing) crystal around the specimen. These cause the dispersion of the wavelength of the secondary radiation.

The intensities of the individual wavelength are measured in a mass gas flow detector. This system allows simultaneous measurements of up to ten elements at peak and background positions. The output signals from the detector were fed into the analyser, where the photon counts were stored in the computer memories. The count rate was calibrated for each element by comparing it to the count rate from a standard of accurately pre-determined composition.

The spectral line energies of wavelengths of the emitted lines were used in the quantitative analysis of the element in the specimen. The intensities of the emitted line were related to their concentration for quantitative analysis.

