

WAVELENGTH-DISPERSIVE X-RAY FLUORESCENCE SPECTROMETRIC DETERMINATION OF CADMIUM IN ZINC ORES

K. Surya Prakash Rao^{1*} and S. Viswanathan²

*1-2-98, Kakatiyanagar, Habsiguda, Hyderabad
Flat B-203, Block-B, United Avenue Apartments, South End,
7-1-29, Ameerpet, Hyderabad*

** Email: ksprao1939@yahoo.co.in*

Abstract

Zinc ores are known to contain significant amounts of cadmium. The paper proposes a simple, accurate, precise, rapid, and non-destructive wavelength-dispersive x-ray fluorescence spectrometric technique for determining cadmium in zinc ores. The technique uses a sequential x-ray fluorescence spectrometer, 100 kV – 80 mA – 3kW x-ray generator, tungsten x-ray tube, LiF 220 analysing crystal, fine (150 µm) collimator, air path, scintillation counter, and short counting times.

The accuracy of the technique is excellent (within 2 percent). The precision is also excellent (within 2 percent). The lower limit of detection is 3 ppm. The time taken for determining cadmium in a batch of twentyfour samples of zinc ores, for a replication of four analyses per sample, by one operator, using a manual wavelength-dispersive x-ray fluorescence spectrometer, is only eight hours.

Keywords: X-ray fluorescence spectrometry, WDXRFS, Cadmium, Zinc ores.

** Corresponding author*