Abstract

Analytical Techniques for Measuring Trace Elements.

M.A. TABATABAI
Department of Agronomy, Iowa State University,
Ames, Iowa 50011,USA.

Contamination of environmental matrices with trace elements has become a major concern in recent years. Therefore, information on the concentration, reactions, and fate of trace elements in soils, water, and plant materials are needed. Methods are available for determination of the individual trace elements by wet chemical methods involving complexation with selective reagents, but these methods are tedious, time consuming, and require analytical skill. Within the past decade significant advances have been made in developing analytical instruments for determination of trace elements, and now several instruments are available that feature multielemental analysis of a variety of samples. This paper is a comprehensive review of the instrumental techniques available for determination of trace elements, including atomic absorption spectrophotometry, inductively coupled plasma-atomic emission spectrometry, neutron activation analysis, ion chromatography, and capillary electrophoresis. When possible, sample preparation,detection limits, advantages and limitations of each technique will be presented.