A rapid and selective method has been developed for the determination of Ag in biological samples and mineral ores by thermal neutron activation analysis employing substoichiometric extraction with 1,2,3-benzotriazole /1,2,3-BT/ into chloroform. The time required for the radiochemical purification and counting of two samples was 1 h. 4.84 μg Ag can be determined with an accuracy of 7.44% and a precision of 3.57%.

INTRODUCTION

NAA occupies a unique place in trace elemental analysis as it is capable of analysis of rare specimens for major and minor constituents, common types of samples for minor or trace constituents by the instrumental approach and analysis of high purity materials or biomedical specimens for trace and ultratrace constituents by the radiochemical approach.
NAA has been applied for the determination of Ag in biological tissues, mineral ores, rocks and meteorites. Various methods for the radiochemical separation of Ag have been employed viz., precipitation, ion exchange and solvent extraction, etc. Of all the radiochemical separation methods employed so far, solvent extraction has been the ideal method because of its simplicity and rapidity.

In the present work the radiochemical separation of Ag from irradiated samples involves the solvent extraction of Ag with substoichiometric amount of 1,2,3-BT into chloroform. 110mAg having a half-life of 253 days, obtained by the irradiation of 109Ag with thermal neutrons was used for the determination.

**EXPERIMENTAL**

**Chemicals and reagents**

A.R. grade AgNO₃ was used for the preparation of standard solutions. The carrier solutions of Au/III/, Cu/II/, Zn/II/, Hg/II/, Cd/II/ and Ag/I/ /10 mg ml⁻¹ each/ were prepared by dissolving the appropriate salts in distilled water. Gravimetric determination of each of the elements was carried out according to the standard methods given in Vogel. Substoichiometric amount of 1,2,3-BT /Fluka-make/ was prepared in 50% A.R. acetic acid. A 1% versenate solution was prepared in distilled water. All the other chemicals, reagents and solvents used were of A.R. grade.

**Instrumentation**

Gamma-ray emitters were counted on a γ-ray spectrometer in conjunction with a 3.5 cm x 3.5 cm NaI/Tl/ well-type detector. Beta-emitters were counted on a thin end-