

**DEVELOPMENT OF NOVEL FLUX FOR EFFECTIVE SAMPLE
DECOMPOSITION OF REFRACTORY SAMPLES AND FIELD
ORIENTED PRE-CONCENTRATION METHODS FOR THE
DETERMINATION OF TWENTY NINE TRACE AND ULTRA
TRACE ELEMENTS IN A VARIETY OF GEOLOGICAL
SAMPLES BY FLAME AND PLASMA TECHNIQUES
FOR APPLICATION TO GEOCHEMICAL
EXPLORATION OF URANIUM**

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Abstract

In Geochemical Exploration work, it is very essential to have simple, cost effective and field oriented pre-concentration procedures to achieve high enrichment factors so that the determination of trace and ultra trace elements is possible at ppb and sub-ppb levels with instruments such as AAS and ICP-AES. This field oriented procedures further avoid transportation of bulkier samples (in hydrogeochemical exploration) and prevent sorption of desired trace elements on to the container during sample storage. As the procedures are simple, involve inexpensive reagents and minimal skills, hence results in high sample throughput, a basic prerequisite in exploration work. High enrichment factors also enable us in achieving high precision and accuracy.

Hence pre-concentration-cum-separation procedures have been developed for determination of selected transition elements, rare earth elements (REE), uranium (U), gold (Au), silver (Ag), and palladium (Pd) in a variety of geological matrices (groundwater, sea-water, rocks, soils) at ppm and ppb levels for application to geochemical exploration. The highlights of the analytical procedures for twenty nine trace elements are given in this paper.

Keywords: Powdered Activated Carbon (PAC), Pyridyl Azo Resorcinol (PAR), Metal - PAR Complexes (M-PAR), Rare Earth Elements (REE), Transition Metals, Gold (Au), Silver (Ag), Palladium (Pd), Groundwater, Sea-water, Laser Induced Fluorimeter (LIF), ICP-AES, Flame AAS.