



## REMOVAL OF LEAD (II) WITH POLY 3-(AZA-18-CROWN-6) SILICA BONDED PHASE FROM SUCCINATE MEDIUM AND SAMPLES ANALYSIS

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### ABSTRACT

A method was described for the determination of micro amount of lead (II) with Poly 3-(Aza-18-crown-6) Silica bonded phase employed as an ion-pair forming a neutral complex from Sodium succinate medium (0.01 to 3.0 M). The adsorbed ion-pair complex was back eluted with 0.5 M hydrochloric acid and determined spectrophotometrically with PAR. The various parameters like concentration of acid, equilibrium time, back eluting agents, loading capacity were optimized for quantitative adsorption of lead (II). The applicability of the proposed method was successfully applied to the analysis of diverse ions, binary mixture of associated metal ions, ternary mixtures, alloys, ayurvedic samples and water samples and lead (II) was determined with the PAR and results of analysis were confirmed by AAS.

**Keywords:** Poly 3-(Aza-18-crown-6) Silica bonded phase, Lead (II), Real sample analysis.

### 1. INTRODUCTION

The separation and determination of trace metals in natural water has increased in the last decades because of the environmental problems and public health studies. Lead deficiency caused anemia and may cause several health problems (cancer, heart disease, arthritis, and diabetes and liver diseases). Lead was restricted to 0.1 mg L<sup>-1</sup> by Granular entrapped adsorbents of crown ether-phosphotungstic acid (PW) and crown ether-phosphomolybdic acid (PMA) in polyacrylamide [1, 2]. Due to the very low concentration of iron and the interfering effect of the matrix, its determination demand very sensitive analytical techniques, Removal of lead and nickel from aqueous solutions by SiO<sub>2</sub> doped potassium titanate, XAD7 impregnated resins with organophosphorus extractants [3]. Extraction of Pb(II) by XAD7 impregnated resins with organophosphorus extractants (DEHPA, Biosorption of Cadmium, Lead, Nickel, and Zinc by Algae [4] Adsorption of Pb(II) onto Modified Rice Bran [5]. Separation and pre concentration were applied to overcome these difficulties. Many procedures are well characterized for such a purpose [6-9]. Solid phase extraction (SPE) has attracted a great attention owing to its simple operation, rapid phase separation, no emulsification, high enrichment factor and easy automation. Organic chelating resins [10], polymer inclusion sorbents [11], modified nanometer-sized alumina [12]. Adsorbent selectively adsorbed Pb (II) from

wastewater again interfering ions [13], controlled-pore glass [14], PS-EDTA resin [15]. A novel polyvinyl-tetrazole-grafted resin with high capacity for the adsorption of heavy metal ions was prepared *via* surface-initiated atom transfer radical polymerization (SI-ATRP) of acrylonitrile on chloromethylated cross linked styrene-divinylbenzene resin and a subsequent cyanotetrazole conversion reaction under microwave assistance [16]. nanofibers, polyacrylonitrile, amidoxime polyacrylonitrile, adsorption [17]. A new method for the preparation of an azacrown ether-bonded silica gel stationary phase has been developed by the authors on the basis of a successive reaction pathway to form the crown ether cycle on the surface of the silica gel [18]. This research article describes in detail the sorption study and separation of lead (II) form other associated elements in sodium succinate medium. The concentration of sodium succinate required for quantitative sorption of lead (II) is very low, a clear cut separation was achieved.

### 2. EXPERIMENTAL

#### 2.1. Apparatus and Reagents

A Ziess Spectrophotometer (German), Digital pH meter (Model LI-120, ELICO, and India) with glass and calomel electrodes and a digital Flame photometer (PI, Model No. 041, and India) were used. A Stock solution of lead (II) was prepared by dissolving 1.59 g of Lead nitrate in 100mL of distilled deionized water and