

ABSTRACT

Title : **BINDING PROPERTIES OF A MOLECULARLY IMPRINTED POLYMER WITH LEAD ACETATE FOR THE SEPARATION AND DETERMINATION OF LEAD**

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This research was carried out to prepare a molecularly imprinted polymer potentially selective to lead acetate compound, lead nitrate solution and tetraethyl lead from an aviation gasoline sample.

Characterization of the binding properties of these lead compounds with the MIP and its use as an adsorbent/stationary phase for extraction and separation processes were experimented. A simple sample extraction technique (MEPS) microextraction in packed syringe was applied.

Free-radical polymerization was employed using methacrylic acid as the monomer; N,N'-methylene bisacrylamide, the crosslinker; potassium persulphate, the initiator; lead acetate, the template and distilled water as the porogen. Polymerization time was 36 hours at 80°C temperature.



Binding properties were investigated through a Scanning Electron Microscope with Energy Dispersive X-rays capability. Binding sites were characterized by IR Spectroscopy and Ultraviolet-Visible Spectrophotometry.

The correlation of the amount of lead adsorbed by the MIP coming from the aviation gasoline sample and from lead nitrate solution was aided by the Atomic Absorption Spectrometer.

Statistically, the decision that there is a significant difference in the amount of lead present in the samples before and after extraction directs to a conclusion that the type of a molecularly imprinted polymer prepared in this research can be used as an adsorbent or a stationary phase in a column for the selective quantification of lead present in lead compounds like lead acetate and lead nitrate.