



University of zabol
Graduate school
Faculty of science
Department of chemistry

The Thesis Submitted for the Degree of Master of Science
(In the field of Analytical Chemistry)

Title:

**Extraction and determination of organophosphates
using a bio-inspired metal-organic framework from
aqueous solutions**

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Abstract

In this research, a bio-inspired metal-organic framework hybridized with bovine serum albumin to give a new composite. This material was characterized using various techniques such as FT-IR, PXRD, SEM/EDX, N₂ adsorption measurement, UV-Vis DRS and TGA. The porous solid was then investigated as an adsorbent for extraction of organophosphates such as diazinon and methyl parathion from the aqueous samples. Affecting parameters on extraction efficiency such as pH of the sample solution, amount of adsorbent, sonication time, volume of eluent, sample volume and desorption time were studied. The limit of detection for diazinon and methyl parathion organophosphates was 1.5 and 1.2 $\mu\text{g.L}^{-1}$, respectively.

Keywords: Albumin, Bio-inspired metal-organic framework, Diazinon, Methyl parathion, Organophosphates, Solid phase extraction, UV-Vis spectrophotometry.