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)

Polyphenol-functionalized metal-organic framework for extraction and determination of mercury by Inductively coupled plasma

Supervisors:
Dr. Mostafa Khajeh
Dr. Alireza Oveisi

Advisor:
Dr. Mansour Ghaffari Moghaddam

By:
Samaneh Nohtani

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Abstract

In this research, Metal-organic framework functionalized with polyphenol was used for extraction and determination of mercury by inductively coupled plasma. The adsorbent was then characterized using FT-IR, PXRD, SEM/EDX, BET, and TGA. This metal-organic framework as an adsorbent then used for extraction and determination of mercury by solid phase extraction and plasma. 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 (LOD) was 1.5 $ng.L^{-1}$. Furthermore, under optimal conditions, this method was used for effective adsorption of mercury in real samples such as the tap water and well water.

Keywords: Polyphenol, Mercury, Metal-organic framework, Solid phase extraction, Inductively coupled plasma.