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PII: S0263-2241(16)30658-3
DOI: http://dx.doi.org/10.1016/j.measurement.2016.11.021
Reference: MEASUR 4442

To appear in: *Measurement*

Received Date: 4 May 2016
Revised Date: 31 October 2016
Accepted Date: 8 November 2016

Please cite this article as: H. Fazelirad, M. Ali Taher, A study on the synthesis and application of magnetic nanosorbent for the simultaneous preconcentration and measurement of toxic metals in different real and standard samples, *Measurement* (2016), doi: http://dx.doi.org/10.1016/j.measurement.2016.11.021

A study on the synthesis and application of magnetic nanosorbent for the simultaneous preconcentration and measurement of toxic metals in different real and standard samples

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Abstract

A magnetic nanosorbent was prepared by application of magnetite (Fe_3O_4) nanoparticles in MWCNTs as the substrate and 1,10-diaza-18-crown-6 as the chelating agent. This synthesized adsorbent showed the excellent ability for the simultaneous solid phase extraction of bismuth and lead via complex formation in a buffer with pH 3.5. After elution of the retained ions from the sorbent with 3.0 mol L^{-1} nitric acid, their concentrations were determined by flame AAS. The combination of synthesized sorbent and suggested method were applied for the determination of Bi and Pb in (spiked) water samples, food and certified reference materials with satisfactory results.

Keywords: Magnetic nanosorbent; Bismuth; Lead; Flame atomic absorption

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