

Accepted Manuscript

Title: Nanomaterials-based strategies for enhanced mercury trace analysis in environmental and drinking waters

Author: Jessica Huber, Kerstin Leopold

PII: S0165-9936(15)30068-6

DOI: <http://dx.doi.org/doi: 10.1016/j.trac.2015.09.007>

Reference: TRAC 14561

To appear in: *Trends in Analytical Chemistry*



Please cite this article as: Jessica Huber, Kerstin Leopold, Nanomaterials-based strategies for enhanced mercury trace analysis in environmental and drinking waters, *Trends in Analytical Chemistry* (2015), <http://dx.doi.org/doi: 10.1016/j.trac.2015.09.007>.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Nanomaterials-based strategies for enhanced mercury trace analysis in environmental and drinking waters

Jessica Huber¹ and Kerstin Leopold^{1,*}

¹ Institute for Analytical and Bioanalytical Chemistry, University of Ulm, Albert-Einstein-Allee 11, 89081 Ulm, Germany

* Corresponding author: Email: kerstin.leopold@uni-ulm.de; Fon: +49 (0)731 50 22754; Fax: +49 (0)731 50 22752;

Highlights

For “Nanomaterials applied for enhanced mercury trace analysis in environmental and drinking waters” by *Jessica Huber and Kerstin Leopold*

- Nanomaterial-based strategies for mercury (Hg) monitoring in water are evaluated
- Most approaches allow Hg detection below 10 nM, some provide LODs in pM-level
- Novel approaches either provide easy sample pre-treatment or enhanced detection
- No combinations of such methodologies are reported so far
- A wide field for future investigations is open to design optimum in-situ Hg sensor

Abstract

This review presents analytical strategies for mercury trace analysis in environmental and drinking water by application of nanomaterials. Thereby methods are classified into approaches (A) aiming to substitute elaborate sample pre-treatment, separation and pre-concentration procedures by simplified procedures; and (B) providing enhanced detection technique in regard to fast signal read-out, miniaturized instrumentation and at the same time high sensitivity. Therefore, the review covers nanomaterials-based sample preparation as well as optical and electrochemical detection techniques. Their applicability for monitoring purpose is discussed by evaluating sensitivity and selectivity considering real water matrices as well as by evaluation of simplicity and analysis duration. A selection of examples published within the last 3 years is presented in two tables. These are sorted into methods allowing for monitoring of permissible Hg level in drinking water (LOD < 10nM) and methods capable of detecting ultra traces of mercury in pristine environmental waters (LOD < 0.05 nM).

Download English Version:

<https://daneshyari.com/en/article/7688896>

Download Persian Version:

<https://daneshyari.com/article/7688896>

[Daneshyari.com](https://daneshyari.com)