

[Available Issues](#) | [Japanese](#)>> [Publisher Site](#)Author: [ADVANCED](#) | Volume Page
Keyword: [TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

ONLINE ISSN : 1348-2246

PRINT ISSN : 0910-6340

Analytical Sciences

Vol. 26 (2010) , No. 6 p.665

[\[PDF \(662K\)\]](#) [\[References\]](#)**A Reflectance Flow-through Thionine Sol-gel Sensor for the Determination of Se(IV)**[Joana A. E. CARVALHIDO^{1\)}](#), [Agostinho A. ALMEIDA^{1\)}](#), [Alberto N. ARAÚJO^{1\)}](#)
and [Maria C. B. S. M. MONTENEGRO^{1\)}](#)*1) REQUIMTE, Dep. Química-Física Fac. Farmácia U. P.*

(Received January 13, 2010)

(Accepted March 31, 2010)

In this work, a reversible sensor to assess the total Se(IV) content in samples is described. Pre-activated glass slides were spin-coated with 100 μL of a 20-h aged sol-gel mixture of 1 mL of tetramethoxysilane, 305 μL of 50 mmol L^{-1} HCl and 2.0 mg of thionine. The flow-cell consisted of one of those slides as a window, and was filled with beads of a polystyrene anionic exchange resin to retain Se(IV) in the form of selenite ions. A reflectance transduction scheme at a wavelength of 596 nm was adopted. The cell was coupled to a multicommutation flow system where a programmed volume of a sample solution and 373 μL of 0.4 mmol L^{-1} iodide in a 1.6 mol L^{-1} HCl solution were sequentially inserted into the cell. The iodine produced from the reaction of retained Se(IV) with iodide bleached the blue color of thionine. Considering a sample volume of 2.30 mL, with which the preconcentration step was minimized, a linear dynamic working range between 1.5 to 20 $\mu\text{g mL}^{-1}$ and a detection limit of 0.29 $\mu\text{g mL}^{-1}$ were obtained. The sensor enabled us to perform approximately 200 assays, and provided results similar to those of electrothermal atomic absorption spectrometry.

[\[PDF \(662K\)\]](#) [\[References\]](#)Download Meta of Article [\[Help\]](#)[RIS](#)[BibTeX](#)

To cite this article:

Joana A. E. CARVALHIDO, Agostinho A. ALMEIDA, Alberto N. ARAÚJO and Maria C. B. S. M. MONTENEGRO, *Anal. Sci.*, Vol. 26, p.665, (2010) .

doi:10.2116/analsci.26.665

JOI JST.JSTAGE/analsci/26.665

Copyright (c) 2010 by The Japan Society for Analytical Chemistry



[Japan Science and Technology Information Aggregator, Electronic](#)

