

## Accepted Manuscript

Sizing and simultaneous quantification of nanoscale titanium dioxide and a dissolved titanium form by single particle inductively coupled plasma mass spectrometry

Janja Vidmar, Radmila Milačič, Janez Ščančar



PII: S0026-265X(16)30303-4  
DOI: doi: [10.1016/j.microc.2017.02.030](https://doi.org/10.1016/j.microc.2017.02.030)  
Reference: MICROC 2716  
To appear in: *Microchemical Journal*  
Received date: 16 August 2016  
Revised date: 25 February 2017  
Accepted date: 27 February 2017

Please cite this article as: Janja Vidmar, Radmila Milačič, Janez Ščančar, Sizing and simultaneous quantification of nanoscale titanium dioxide and a dissolved titanium form by single particle inductively coupled plasma mass spectrometry. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. *Microc*(2017), doi: [10.1016/j.microc.2017.02.030](https://doi.org/10.1016/j.microc.2017.02.030)

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.

# Sizing and simultaneous quantification of nanoscale titanium dioxide and a dissolved titanium form by single particle inductively coupled plasma mass spectrometry

Janja Vidmar<sup>1,2</sup>, Radmila Milačič<sup>1,2</sup>, Janez Ščančar<sup>1,2\*</sup>

<sup>1</sup>*Department of Environmental Sciences, Jožef Stefan Institute, Jamova 39, 1000 Ljubljana, Slovenia*

<sup>2</sup>*Jožef Stefan International Postgraduate School, Jamova 39, 1000 Ljubljana, Slovenia*

\*Corresponding author: Tel.: +386 1 4773846.

janez.scancar@ijs.si (J. Scancar)

## ABSTRACT

As a consequence of their widespread use, titanium dioxide nanoparticles (TiO<sub>2</sub>NPs) have been released into the environment where they can act as stressors towards biota. For the assessment of the environmental impact of these NPs it is important to quantitatively determine their concentration, size distribution and the dissolved Ti fraction in different water samples. In the present work, a new analytical approach was applied for sizing and quantitative determination of TiO<sub>2</sub>NPs (anatase and rutile) and dissolved Ti in aqueous samples by the use of single particle inductively coupled plasma mass spectrometry (SP-ICP-MS). The accuracy of the quantification of TiO<sub>2</sub>NPs by SP-ICP-MS was verified by calculating the recoveries between the determined and expected Ti concentrations (90 – 100 %). The size distributions of TiO<sub>2</sub>NPs calculated by SP-ICP-MS (108 ± 10 nm for rutile, 29 ± 2 nm for anatase) were in a good agreement with data obtained by TEM (96 – 106 nm for

Download English Version:

<https://daneshyari.com/en/article/5139201>

Download Persian Version:

<https://daneshyari.com/article/5139201>

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