

# Author's Accepted Manuscript

Over a century of detection and quantification capabilities in analytical chemistry – historical overview and trends

Magdalena Belter, Adam Sajnóg, Danuta Barańkiewicz



[www.elsevier.com/locate/talanta](http://www.elsevier.com/locate/talanta)

PII: S0039-9140(14)00393-2  
DOI: <http://dx.doi.org/10.1016/j.talanta.2014.05.018>  
Reference: TAL14778

To appear in: *Talanta*

Received date: 21 January 2014  
Revised date: 9 May 2014  
Accepted date: 14 May 2014

Cite this article as: Magdalena Belter, Adam Sajnóg, Danuta Barańkiewicz, Over a century of detection and quantification capabilities in analytical chemistry – historical overview and trends, *Talanta*, <http://dx.doi.org/10.1016/j.talanta.2014.05.018>

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 galley proof before it is published in its final citable 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.

**Over a century of detection and quantification capabilities in analytical chemistry –  
historical overview and trends**

Magdalena Belter<sup>a</sup>, Adam Sajnog<sup>a</sup>, Danuta Barańkiewicz<sup>a</sup>

<sup>a</sup> Department of Trace Element Analysis by Spectroscopy Method, Faculty of Chemistry,  
Adam Mickiewicz University in Poznan, 89b Umultowska Street, 61-614 Poznan, Poland

E-mail addresses:

magdabel@amu.edu.pl (M. Belter)

adam.sajnog@amu.edu.pl (A. Sajnog)

danutaba@amu.edu.pl (D. Barańkiewicz)

Tel.: +48 61 829 15 73, fax: +48 61 829 15 55

Corresponding Author: Danuta Barańkiewicz

Keywords: detection limit, quantification limit, historical and modern approaches, review

**Abstract**

The detection limit ( $L_D$ ) and the quantification limit ( $L_Q$ ) are important parameters in the validation process. Estimation of these parameters is especially important when trace and ultra-trace quantities of analyte are to be detected. When the apparatus response from the analyte is below the detection limit, it does not necessarily mean that the analyte is not present in the sample. It may be a message that the analyte concentration could be below the detection capabilities of the instrument or analytical method. By using a more sensitive detector or a different analytical method it is possible to quantitatively determine the analyte in a given sample. The terms associated with detection capabilities have been present in the scientific literature for at least the past 100 years. Numerous terms, definitions and approaches to calculations have been presented during that time period. This paper is an attempt to collect

Download English Version:

<https://daneshyari.com/en/article/7680625>

Download Persian Version:

<https://daneshyari.com/article/7680625>

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