

ISO/TS 19590:2017-03 (E)

Nanotechnologies - Size distribution and concentration of inorganic nanoparticles in aqueous media via single particle inductively coupled plasma mass spectrometry

Contents		Page
Foreword		iv
Introduction		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Abbreviated terms	2
5	Conformance	2
6	Procedure	3
6.1	Principle	3
6.2	Apparatus and equipment	3
6.3	Chemicals, reference materials and reagents	3
6.3.1	Chemicals	3
6.3.2	Reference materials	3
6.3.3	Reagents	4
6.4	Samples	4
6.4.1	Amount of sample	4
6.4.2	Sample dilution	5
6.5	Instrumental settings and performance check	5
6.5.1	Settings of the ICP-MS system	5
6.5.2	Checking the performance of the ICP-MS system	5
6.6	Determination of the transport efficiency	6
6.6.1	Determination of transport efficiency based on measured particle frequency	6
6.6.2	Determination of transport efficiency based on measured particle size	7
6.7	Determination of the linearity of response	8
6.8	Determination of the blank level	8
6.9	Analysis of aqueous suspension	8
6.10	Data conversion	9
7	Results	9
7.1	Calculations	9
7.1.1	Calculation of the transport efficiency	10
7.1.2	Calculation of the ICP-MS response	10
7.1.3	Calculation of particle concentration and size	10
7.1.4	Calculation of the particle concentration detection limit	11
7.1.5	Calculation of the particle size detection limit	12
7.1.6	Calculation of ionic concentration	13
7.2	Performance criteria	13
7.2.1	Transport efficiency	13
7.2.2	Linearity of the calibration curve	13
7.2.3	Blank samples	13
7.2.4	Number of detected particles	13
8	Test report	13

Annex A (informative) Calculation spreadsheet	15
Bibliography	19