1. Record Nr. UNINA9911019108803321

Titolo	Reference materials for chemical analysis : certification, availability, and proper usage / / edited by Markus Stoeppler, Wayne R. Wolf, Peter J. Jenks
Pubbl/distr/stampa	Weinheim ; ; New York, : Wiley-VCH, c2001
ISBN	9786611764050 9781281764058 1281764051 9783527613045 3527613048 9783527613052 3527613056
Descrizione fisica	1 online resource (325 p.)
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Disciplina	016.543 543/.00218
Soggetti	Analytical chemistry - Quality control Materials - Standards
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Reference Materials for Chemical Analysis; Foreword; Contents; Preface; 1 Introduction; 1.1 Historical; 1.1.1 Early Developments; 1.1.2 Growth and Maturity; 1.1.3 Milestones and The Future; 1.2 The Theoretical Basis; 1.3 Technical Requirements; 1.4 References; 2 From Planning to Production; 2.1 Material Collection and Preparation; 2.1.1 Introduction; 2.1.2 General Collection and Preparation Principles; 2.1.3 Specific Examples; 2.1.4 Concluding Remarks and Recommendations; 2.2 Control of Material Properties; 2.2.1 Particle Size and Particle Size Distribution; 2.2.2 Homogeneity/Heterogeneity 2.2.3 Humidity (Water Content)2.2.4 Degradation Studies/Shelf Life; 2.3 References; 3 Certification; 3.1 Certification Philosophy of RM

Producers; 3.1.1 Introduction; 3.1.2 Approaches to the Characterization/Certification of Reference Materials; 3.1.2.1 General Principles of Certification; 3.1.2.2 Classification of Characterization/Certification Schemes; 3.1.2.3 Specific Examples; 3.1.3 Conclusions; 3.2 Certification of Elements; 3.2.1 Methods Used for the Certification of RMs for Elements; 3.2.2 Multi-Method Elemental RM Certification; 3.2.2.1 River Sediment; 3.2.2.2 Lichen 3.2.2.3 Examples of Selected RMs Certified for Elements3.2.3 Certification of Element Contents by Neutron Activation Analysis; 3.2.3.1 General Features; 3.2.3.2 Internal Cross-Checking (Self-Verification) in NAA; 3.2.3.3 Applications in Certification and Analysis; 3.2.3.4 NAA for the Detection of Errors; 3.2.3.5 Summary; 3.3 Certification of Organometallic and Other Species; 3.3.1 Introduction; 3.3.2 Potential Sources of Error in Speciation Analysis; 3.3.3 Restricted List of Chemical Species for Trace Elements and Their Compounds; 3.3.3.1 Aluminum; 3.3.3.2 Antimony; 3.3.3.3 Arsenic 3.3.3.4 Bromine3.3.3.5 Chromium; 3.3.3.6 Mercury; 3.3.3.7 Lead; 3.3.3.8 Selenium; 3.3.3.9 Tin; 3.3.3.10 Metallothionein; 3.3.4 Fractionation; 3.3.5 Conclusions; 3.4 Certification of Organic Substances; 3.4.1 Introduction; 3.4.2 CRMs Available for Organic Constituents; 3.4.2.1 Pure Substances; 3.4.2.2 Calibration Solution CRMs; 3.4.2.3 Natural Matrix SRMs; 3.4.3 Certification Approach for Organic Constituents; 3.4.3.1 NISTApproach for Certification; 3.4.3.2 NIST Analytical Approach for the Certification of Organic Constituents in Natural Matrix SRMs; 3.4.3.3 BCR Approach to Certification 3.5 References4 Particular Developments; 4.1 RMs in Quality Control and Quality Assessment; 4.1.1 Introduction; 4.1.2 Proper Usage; 4.1.3 Characterization of Methods; 4.1.4 Internal Quality Control; 4.1.5 External Quality Assurance; 4.1.5.1 State of the Art; 4.1.5.2 Performance of Individual Laboratories; 4.1.5.3 Supplement Internal Quality Control; 4.1.5.4 To Obtain Consensus Values; 4.1.5.5 Investigate Factors Contributing to Performance; 4.1.5.6 To Act as an Educational Stimulus - To License Laboratories?; 4.1.6 Conclusions; 4.2 Fresh Materials; 4.2.1 Introduction; 4.2.2 Packing Materials 4.2.3 Preparation

Sommario/riassunto

There are many academic references describing how RMs are made, but few that explain why they are used, how they should be used and what happens when they are not properly used.In order to fill this gap, the editors have taken the contributions of more than thirty RM practitioners to produce a highly readable text organized in nine chapters. Starting with an introduction to historical, theoretical and technical requirements, the book goes on to examine all aspects of RM production from planning, preparation through analysis to certification, reviews recent development areas, RMs for li