

Contents

1 Introduction

Adolf Zschunke

1.1 Analytical Thinking	1
1.2 Demands on Analytical Chemistry	5
1.3 Measures Designed to Build Confidence	6
1.4 References	7

2 Classification of Reference Materials

Werner Hässelbarth

2.1 Definitions	10
2.2 Physical Character	12
2.3 Supplied Property	15
2.4 Metrological Qualification	16
2.5 Preparation Method	18
2.6 Intended Use	20
2.7 References	23

3 Certification of Reference Materials

3.1 Procedures and Strategies. By T. Tamberg	25
3.2 Definitions of Terms and Modes Used at NIST for Value-Assignment of Reference Materials for Chemical Measurement. By W. May et al.	34
3.3 Data Assessment: Influence of Homogeneity and Stability on the Reliability of Certified Amounts. By S. Noack	50
3.4 References	55

4 Reference Materials in Materials Testing

Klaus Meyer and Ralf Matschat

4.1 Strategies	57
4.2 Preparation	82
4.3 Special Qualities and Properties (Types of Reference Materials) ..	91
4.4 Applications	97
4.5 References	138

5 Reference Materials in Environmental Studies

Irene Nehls and Tin Win

5.1 Reference Materials in Environmental Analysis	143
5.2 Matrix Reference Materials in Environmental Analysis	146
5.3 Use of Matrix Reference Materials	155
5.4 References	165

6 Reference Materials in Clinical and Forensic Toxicological Analysis

Fritz Pragst and Wolf-Rüdiger Külpmann

6.1 Problems of Human Toxicological Analysis	167
6.2 Qualitative Analysis	171
6.3 Forensic Ethanol Determination	176
6.4 Drugs in Blood and Urine	179
6.5 Metabolites in Toxicological Analysis	188
6.6 Reference Materials in Hair Analysis	192
6.7 References	194

7 Use of Reference Materials in Gas Analysis

Bruno Reimann

7.1 Particularities of Gases and Gas Mixtures	199
7.2 References	204

8 The International Network

Harry Klich

8.1 ISO	205
8.2 COMAR: The International Database for CRMs	211
8.3 IAEA	214
8.4 AOAC	215
8.5 European Activities	215
8.6 International and Regional Conferences	216
8.7 Classification of EURONORM-CRMs	217
8.8 References	218

Index	219
------------------------	-----