Contents

List of symbols XII

Definitions, units and conversion factors XVII

List of abbreviations XVIII

1 Magnetic properties of 3d, 4d and 5d elements, alloys and compounds

1.1 3d elements . . . . . see subvolume III/19a

1.2 Alloys between 3d elements . . . . . see subvolume III/19a

1.3 4d and 5d elements, alloys and compounds . . . . . see subvolume III/19a

1.4 Alloys and compounds of 3d elements and 4d or 5d elements . . . . . see subvolume III/19a

1.5 Alloys and compounds of 3d elements with main group elements 1

1.5.1 3d elements and Cu, Ag or Au (G. ZIBOLD) 1

1.5.1.1 Introduction 1

1.5.1.2 Definition of the various kinds of magnetism 1

1.5.1.2.1 Spin-glass behaviour and mictomagnetism 1

1.5.1.2.2 Diamagnetism 1

1.5.1.2.3 Paramagnetism 2

1.5.1.2.4 Ferromagnetism 2

1.5.1.2.5 Antiferromagnetism 2

1.5.1.2.6 Metamagnetism 2

1.5.1.3 Remarks and relations concerning various quantities 2

1.5.1.3.1 Curie-Weiss law 2

1.5.1.3.2 Magnetization 3

1.5.1.3.3 Arrott plots 3

1.5.1.3.4 Magnetic anisotropy 3

1.5.1.3.5 High-frequency properties 4

1.5.1.3.6 Hall resistivity ϱ_H 4

1.5.1.4 Remarks on some concepts of metallurgy 4

1.5.1.4.1 Quenched bulk alloys 4

1.5.1.4.2 Quench-condensation 5

1.5.1.4.3 Annealing 5

1.5.1.4.4 Ageing 5

1.5.1.4.5 Cold working 5

1.5.1.5 Surveys 6

1.5.1.6 3d transition elements with Cu 11

1.5.1.7 3d transition elements with Ag 70

1.5.1.8 3d transition elements with Au 84

1.5.1.9 References for 1.5.1 139

1.5.2 3d elements and Be, Mg, Zn or Hg (H. P. J. WIJN) 149

1.5.2.1 Alloys and compounds of 3d elements with Be 149

1.5.2.2 Alloys and compounds of 3d elements with Mg 179

1.5.2.3 Alloys and compounds of 3d elements with Zn or Hg 184

1.5.2.4 References for 1.5.2 199

1.5.3 3d elements and B, Al, Ga, In or Tl (J. G. BOOTH) 201

1.5.3.1 Introduction 201

1.5.3.2 3d-B alloys and compounds 202

1.5.3.3 3d-Al alloys and compounds 250

1.5.3.3.1 Sc–Al 250

1.5.3.3.2 Ti–Al 251

1.5.3.3.3 V–Al 258

1.5.3.3.4 Cr–Al 264

1.5.3.3.5 Mn–Al 273

1.5.3.3.6 Fe–Al 295

1.5.3.3.7 Co–Al 357
1.5.3.3.8 Ni–Al 376
1.5.3.4 3d-Ga compounds 421
1.5.3.4.1 Sc–Ga 421
1.5.3.4.2 Ti–Ga 422
1.5.3.4.3 V–Ga 424
1.5.3.4.4 Cr–Ga 430
1.5.3.4.5 Mn–Ga 431
1.5.3.4.6 Fe–Ga 445
1.5.3.4.7 Co–Ga 455
1.5.3.4.8 Ni–Ga 483
1.5.3.4.9 Cu–Ga 500
1.5.3.5 3d-In alloys and compounds 502
1.5.3.5.1 Sc–In 503
1.5.3.5.2 Mn–In 514
1.5.3.5.3 Ni–In 515
1.5.3.6 3d-Tl alloys and compounds 517
1.5.3.7 References for 1.5.3 520