

Contents

2 Magnetic properties of rare earth elements, alloys and compounds (H. DRULIS, M. DRULIS)	1
2.1 Rare earth elements	1
2.1.1 Introduction	1
2.1.2 Tables	4
2.1.3 Figures	42
2.1.3.1 Rare earth metals: General	42
2.1.3.2 Cerium	48
2.1.3.3 Praseodymium	55
2.1.3.4 Neodymium	73
2.1.3.5 Samarium	87
2.1.3.6 Europium	91
2.1.3.7 Gadolinium	98
2.1.3.8 Terbium	109
2.1.3.9 Dysprosium	129
2.1.3.10 Holmium	150
2.1.3.11 Erbium	165
2.1.3.12 Thulium	175
2.1.3.13 Ytterbium	180
2.1.3.14 Lutetium	181
2.1.3.15 Scandium	182
2.1.4 References for 2.1	183
2.2 Alloys between rare earth elements (S. KAWANO, N. ACHIWA)	190
2.2.1 Introduction	190
2.2.2 Alloys between light rare earth elements	191
2.2.2.1 General remarks	191
2.2.2.2 Ce-La	192
2.2.2.3 Nd-La	193
2.2.2.4 Pr-Nd	194
2.2.3 Alloys between heavy and light rare earth elements	195
2.2.3.1 General remarks	195
2.2.3.2 Gd – light rare earth alloys	198
2.2.3.3 Tb – light rare earth alloys	201
2.2.3.4 Dy – light rare earth alloys	205
2.2.3.5 Ho – light rare earth alloys	206
2.2.3.6 Er – light rare earth alloys	209
2.2.3.7 Yb-Eu	213
2.2.3.8 Sm-type structure alloys	215
2.2.3.9 Y – light rare earth alloys	217
2.2.3.10 La-rich heavy rare earth alloys	218
2.2.4 Alloys between heavy rare earth elements	219
2.2.4.1 General remarks	219
2.2.4.2 Gd-Y, Sc, Lu, Tb, Dy, Ho, Er or Tm	225
2.2.4.2.1 Gd-Y or Sc alloys	225
2.2.4.2.2 Gd-Lu	232
2.2.4.2.3 Gd-Tb	234
2.2.4.2.4 Gd-Dy	238
2.2.4.2.5 Gd-Ho	240
2.2.4.2.6 Gd-E	241
2.2.4.3 Tb-Y, Sc, Dy, Ho, Er, Tm, Yb or Lu	242
2.2.4.3.1 Tb-Y, Lu or Sc	242

2.2.4.3.2 Tb–Dy	250
2.2.4.3.3 Tb–Ho	251
2.2.4.3.4 Tb–Er	258
2.2.4.3.5 Tb–Tm	262
2.2.4.3.6 Tb–Yb	263
2.2.4.4 Dy–Y, Ho or Er	264
2.2.4.4.1 Dy–Y	264
2.2.4.4.2 Dy–Ho	265
2.2.4.4.3 Dy–Er	266
2.2.4.5 Ho–Y, Sc or Er	266
2.2.4.5.1 Ho–Y or Sc	266
2.2.4.5.2 Ho–Er	268
2.2.4.6 Er–Y, Tm or Lu	270
2.2.4.6.1 Er–Y or Lu	270
2.2.4.6.2 Er–Tm	271
2.2.4.7 Tm–Y or Lu	272
2.2.4.8 Y, Sc or Lu-rich heavy rare earth alloys	273
2.2.5 References for 2.2	277
2.3 Rare earth hydrides (R. R. ARONS)	280
2.3.1 Introduction	280
2.3.2 Survey	288
2.3.3 Crystallographic and thermal properties, phase diagrams	315
2.3.4 Magnetic properties	331
2.3.5 Crystal field properties	347
2.3.6 Electrical properties	358
2.3.7 Electron spin resonance	365
2.3.8 Nuclear magnetic resonance	368
2.3.9 Spectroscopic properties	380
2.3.10 Acoustic sound velocities	390
2.3.11 References for 2.3	391

