

Table of contents

Magnetic properties of non-metallic inorganic compounds based on transition elements

Subvolume J3: Halide perovskite-type layer structures

9	Magnetic properties of halides	1
9.1...9.5		see subvolume J1
9.6...9.11		see subvolume J2
9.12	Halide perovskite-type layer structures (R. GEICK)	1
9.12.1	Introduction	1
9.12.1.1	Characterization of perovskite-type layer structures	1
9.12.1.2	Lattice dynamics: intralayer and interlayer forces	4
9.12.1.3	Comments on notation and units and Table 1	9
9.12.1.4	References for 9.12.1	40
9.12.2	Structural properties	43
9.12.2.1	Structures	43
9.12.2.1.1	General aspects	43
9.12.2.1.2	Easy-axis antiferromagnets	45
9.12.2.1.3	Easy-plane ferromagnets and antiferromagnets	47
9.12.2.1.4	Structures resulting from structural phase transitions	49
9.12.2.1.5	Mixed crystals	52
9.12.2.2	Structural phase transitions	54
9.12.2.2.1	Experimental investigations	54
9.12.2.2.2	Group-theoretical considerations	61
9.12.2.2.3	Structural phase transitions in monoammonium compounds	65
9.12.2.2.4	Model for the phase transitions in monoammonium compounds	68
9.12.2.2.5	Long-chain compounds	73
9.12.2.2.6	Diammonium compounds	74
9.12.2.3	Figures for 9.12.2 and Tables 2, 3 and 4	78
9.12.2.4	References for 9.12.2	148
9.12.3	Magnetic properties	159
9.12.3.1	Antiferromagnets	159
9.12.3.1.1	Exchange interaction	159
9.12.3.1.2	Mn-compounds, spin-wave theory	160
9.12.3.1.3	Temperature-dependent properties, high temperature series	167
9.12.3.1.4	Double-layer compounds	171
9.12.3.1.5	Ni- and Fe-compounds	172

9.12.3.1.6	Spin-flop transition – AFMR under various conditions	175
9.12.3.1.7	Canted antiferromagnets, weak ferromagnetism	181
9.12.3.1.8	Antiferromagnetic Cu-compounds	184
9.12.3.1.9	Co-compounds (2D Ising model).	186
9.12.3.2	Ferromagnets	188
9.12.3.2.1	Cu-compounds	188
9.12.3.2.2	Cr-compounds	195
9.12.3.2.3	Spin-reorientation transitions – FMR under various conditions	201
9.12.3.2.4	Magnetic polaritons	208
9.12.3.2.5	Parallel pumping experiments	210
9.12.3.3	Doped and mixed systems	213
9.12.3.3.1	Paramagnetic centres in diamagnetic host crystals	213
9.12.3.3.2	Magnetic ordering in diluted systems	216
9.12.3.3.3	Spin waves in diluted magnets	222
9.12.3.3.4	Excitations in mixed antiferromagnets	227
9.12.3.3.5	Mixed antiferromagnets with competing anisotropies	233
9.12.3.3.6	Mixed magnets with competing exchange interactions	236
9.12.3.4	Figures for 9.12.3 and Table 5	243
9.12.3.5	References for 9.12.3	328
9.12.4	Critical phenomena	349
9.12.4.1	Static critical behaviour	349
9.12.4.1.1	General	349
9.12.4.1.2	2D Ising model.	351
9.12.4.1.3	Experimental determination of α	354
9.12.4.1.4	Experimental determination of β	356
9.12.4.1.5	Experimental determination of γ , ν and η	357
9.12.4.1.6	Experimental test of the two-scale-factor universality	360
9.12.4.1.7	2D Heisenberg model	361
9.12.4.1.8	2D XY-model	364
9.12.4.1.9	Crossover phenomena	376
9.12.4.1.10	3D XY-model – structural phase transitions	379
9.12.4.1.11	Critical behaviour near the percolation threshold	382
9.12.4.1.12	Random field effects – random field Ising model	391
9.12.4.1.13	Critical properties of spin glasses – 2D Ising spin glass	398
9.12.4.2	Dynamic critical properties and relaxation	402
9.12.4.2.1	Characteristic frequency from neutron inelastic scattering	402
9.12.4.2.2	Relaxation time – activated dynamics – aging	403
9.12.4.2.3	Spin-wave lineshape of a 2D Heisenberg ferromagnet	409
9.12.4.2.4	2D XY-model: influence of vortices on $S(\mathbf{q}, \omega)$	411
9.12.4.2.5	Critical broadening of the NMR linewidth	413
9.12.4.2.6	Critical broadening of the EPR linewidth	414
9.12.4.2.7	Critical EPR linewidth due to solitons or due to magnons?	417
9.12.4.2.8	EPR linewidth at high temperatures – spin diffusion	420
9.12.4.2.9	EPR linewidth in mixed crystals	423
9.12.4.3	Figures for 9.12.4 and Table 6	427
9.12.4.4	References for 9.12.4	485
	Contents of further subvolumes of III/27	504
	List of editor and authors of Vol. III/27	530