

1. Record Nr.	UNINA9910140557603321
Titolo	Magnetic properties of antiferromagnetic oxide materials [[electronic resource]] : surfaces, interfaces, and thin films / / edited by Lamberto Duo, Marco Finazzi, and Franco Cicacci
Pubbl/distr/stampa	Weinheim, : Wiley-VCH Verlag, 2010
ISBN	1-282-68734-4 9786612687341 3-527-63037-6 3-527-63038-4
Descrizione fisica	1 online resource (363 p.)
Altri autori (Persone)	DuoLamberto FinazziMarco CicacciFranco
Disciplina	530.412 538.44
Soggetti	Antiferromagnetism Surfaces (Physics) Electronic books.
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	Magnetic Properties of Antiferromagnetic Oxide Materials; Contents; 6.5.1.1 The Case of af 1; Preface; List of Contributors; 1 Low-Dimensional Antiferromagnetic Oxides : An Overview; 1.1 Introduction; 1.2 Finite-Size Effects on the Magnetic Ordering Temperature; 1.3 AFM Anisotropy; 1.3.1 Magnetocrystal Anisotropy; 1.3.2 Dipolar Anisotropy; 1.4 Interlayer Coupling in AFM-FM Bilayers and Multilayers; 1.4.1 AFM-FM Interface Coupling; 1.4.2 Coupling between FM Layers Separated by an AFM Oxide Spacer; 1.5 Micromagnetic Structure at AFM-FM Interfaces; 1.6 Applications; 1.7 Conclusions; References 2 Growth of Antiferromagnetic Oxide Thin Films2.1 Introduction; 2.2 Nickel Oxide; 2.2.1 Ultrathin NiO Layers; 2.2.2 Thick NiO Films; 2.3 Cobalt Oxide; 2.3.1 Ultrathin CoO Layers; 2.3.2 Thick CoO Films; 2.4 Other Oxides; 2.4.1 MnO(001); 2.4.2 FeO; 2.4.3 -Fe ₂ O ₃ ; 2.5 Oxide-Substrate Interface; 2.6 Polar-Oxide Surfaces; 2.7 Conclusions and

Perspectives; Acknowledgments; References; 3 Dichroism in X-ray Absorption for the Study of Antiferromagnetic Materials; 3.1 X-ray Absorption and X-ray Dichroism; 3.1.1 X-ray Magnetic Circular Dichroism in the One-Electron Approximation
3.1.1.1 Spin-Orbit Coupling in the d-Band3.1.1.2 Core-Hole and Other Many-Body Effects; 3.1.2 XMCD in the Strongly Correlated Limit: Multiplet Effects; 3.1.2.1 Ligand Field Atomic Multiplet Calculations; 3.1.2.2 Charge-Transfer Effects; 3.2 Sum Rules for X-ray Dichroism; 3.2.1 Orbital Moment; 3.2.2 Spin Moment; 3.2.3 Sum Rule for Linear Dichroism; 3.3 Experimental Determination of X-ray Absorption; 3.4 Linear X-ray Dichroism in Rare-Earth Compounds; 3.4.1 $\text{Fe}_x\text{Tb}_{1-x}$ Amorphous Thin Films; 3.5 Magnetic Dichroism in TM Oxides; 3.5.1 Magnetic Linear Dichroism in Thin NiO Films on MgO
3.5.1.1 Calculations3.5.1.2 Sample Preparation; 3.5.1.3 Experiment; 3.5.1.4 Results; 3.6 Conclusions; References; 4 Antiferromagnetic Oxide Films on Nonmagnetic Substrates; 4.1 Introduction; 4.2 Electronic Structure of TM Oxides; 4.2.1 Mott-Hubbard and Charge Transfer Insulators; 4.2.2 Ligand Field Theory; 4.2.2.1 Independent Electron Ligand Field Theory; 4.2.2.2 Multiplet Ligand Field Theory; 4.2.3 Spin-Orbit Coupling in Cubic Symmetry; 4.2.3.1 Single Electron in an Open t_{2g} Shell; 4.2.3.2 d_6 and d_7 Configurations; 4.3 Magnetic Structure; 4.3.1 Magnetic Ordering of MnO , FeO , CoO and NiO
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Appendix: Polarization and Spin Direction Dependence of the Linear Dichroism in Nonspherical Symmetry

Sommario/riassunto

This first focused treatment on a hot topic highlights fundamental aspects as well as technological applications arising from a fascinating area of condensed matter physics. The editors have excellent track records and, in light of the broadness of the topic, retain the focus on antiferromagnetic oxides. They thus cover such topics as dichroism in x-ray absorption, non-magnetic substrates, exchange bias, ferromagnetic-antiferromagnetic interface coupling and oxide multilayers, as well as imaging using soft x-ray microscopy. The result is a very timely monograph for solid state physicist
