1. Record Nr. UNINA9911007011503321

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Titolo	Epitaxial Growth of Complex Metal Oxides : Techniques, Properties and Applications
Pubbl/distr/stampa	Burlington, : Elsevier Science, 2015
Descrizione fisica	1 online resource (505 p.)
Collana	Woodhead Publishing Series in Electronic and Optical Materials
Altri autori (Persone)	HuijbenM RijndersGuus
Disciplina	621.38152
Soggetti	Epitaxy Thin films -- Surfaces Thin films, Multilayered Materials Science Chemical & Materials Engineering Engineering & Applied Sciences
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di contenuto	Front Cover; Related titles; Epitaxial Growth of Complex Metal OxidesWoodhead Publishing Series in Electronic and Optical Materials: Number 76Edited byG ...; Copyright; Contents; List of contributors; Woodhead Publishing Series in Electronic and Optical Materials; Part 1 - Epitaxial growth of complex metal oxides; 1 - Growth studies of heteroepitaxial oxide thin films using reflection high-energy electron diffraction (RHEED); 1.1 Introduction: reflection high-energy electron diffraction and pulsed laser deposition; 1.2 Basic principles of RHEED1 1.3 Variations of the specular intensity during deposition1.4 RHEED intensity variations during heteroepitaxy: examples; 1.5 Conclusions; Acknowledgments; References; 2 - Sputtering techniques for epitaxial growth of complex oxides; 2.1 Introduction; 2.2 General considerations for sputtering of complex oxides; 2.3 A practical guide to the sputtered growth of perovskite titanate ferroelectrics; 2.4 Conclusions; References; 3 - Hybrid molecular beam epitaxy for the growth of complex oxide materials; 3.1 Introduction; 3.2 Metal-organic precursors for oxide hybrid molecular beam epitaxy (HMBE)

3.3 Deposition kinetics of binary oxides from metal-organic (MO) precursors3.4 Opening a growth window with MO precursors; 3.5 Properties of materials grown by hybrid oxide molecular beam epitaxy (MBE); 3.6 Limitations of HMBE and future developments; Acknowledgments; References; 4 - Chemical solution deposition techniques for epitaxial growth of complex oxides; 4.1 Introduction; 4.2 Reagents and solvents; 4.3 Types of chemical solution deposition (CSD) processes; 4.4 Film and pattern formation; 4.5 Crystallization, densification and epitaxy; 4.6 Examples of CSD-derived oxide films
4.7 ConclusionsReferences; 5 - Epitaxial growth of superconducting oxides; 5.1 Introduction; 5.2 Overview of epitaxial growth of superconducting oxides; 5.3 Requirements for growth of high-quality complex metal-oxide films by molecular-beam epitaxy (MBE); 5.4 Case studies; 5.5 Synthesis of new superconductors by thin-film growth methods; 5.6 Conclusions and future trends; 5.7 Sources of further information and advice; Acknowledgments; References; 6 - Epitaxial growth of magnetic-oxide thin films; 6.1 Introduction; 6.2 Magnetism and major magnetic-oxide systems
6.3 The effects of thin-film epitaxy on magnetism6.4 Characterization of magnetic-oxide thin films; 6.5 Applications of epitaxial magnetic-oxide thin films; 6.6 Future of epitaxy of complex-oxide magnets; Acknowledgments; References; Part 2 - Properties and analytical techniques; 7 - The effects of strain on crystal structure and properties during epitaxial growth of oxides; 7.1 Introduction; 7.2 Crystal structures of perovskites and related oxides; 7.3 Lattice mismatch-induced stress accommodation in oxide thin films
7.4 Effect of misfit strain-induced distortions on transport and magnetic properties

Sommario/riassunto

The atomic arrangement and subsequent properties of a material are determined by the type and conditions of growth leading to epitaxy, making control of these conditions key to the fabrication of higher quality materials. Epitaxial Growth of Complex Metal Oxides reviews the techniques involved in such processes and highlights recent developments in fabrication quality which are facilitating advances in applications for electronic, magnetic and optical purposes. Part One reviews the key techniques involved in the epitaxial growth of complex metal oxides, including growth studies using reflec