

1. Record Nr.	UNINA990005265000403321
Autore	Pfohl, Gerhard
Titolo	Greek poems on Stones / edited by Gerhard Pfohl
Pubbl/distr/stampa	Leiden : E. J. Brill, 1967
Descrizione fisica	v. ; 20 cm
Collana	Textus minores ; 36
Locazione	FLFBC
Collocazione	P2B-100-PFOHL G.-1967 P2B-100-PFOHL G.-1967 bis
Lingua di pubblicazione	Inglese Greco Moderno
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	1.: Epitaphs : from the Seventh to the Fifth centuries B. C.

2. Record Nr.	UNINA9910830439703321
Autore	Defay Emmanuel
Titolo	Ferroelectric dielectrics integrated on silicon [[electronic resource] /] / edited by Emmanuel Defay
Pubbl/distr/stampa	London, : ISTE Ltd. Hoboken, N.J., : John Wiley, 2011
ISBN	1-118-60275-7 1-118-60276-5 1-118-60280-3
Edizione	[1st edition]
Descrizione fisica	1 online resource (464 p.)
Collana	ISTE
Altri autori (Persone)	DefayEmmanuel
Disciplina	621.3815/2 621.38152
Soggetti	Ferroelectric thin films Silicon - Electric properties Electric batteries - Corrosion
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Adapted and updated from: Dielectriques ferroelectriques integres sur silicium, published in France by Hermes Science/Lavoisier, 2011.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cover; Title Page; Copyright Page; Table of Contents; Preface; Chapter 1. The Thermodynamic Approach; 1.1. Background; 1.2. The functions of state; 1.3. Linear equations, piezoelectricity; 1.4. Nonlinear equations, electrostriction; 1.5. Thermodynamic modeling of the ferroelectric-paraelectric phase transition; 1.5.1. Assumption on the elastic Gibbs energy; 1.5.2. Second-order transition; 1.5.3. Effect of stress; 1.5.4. First-order transition; 1.6. Conclusion; 1.7. Bibliography; Chapter 2. Stress Effect on Thin Films; 2.1. Introduction; 2.2. Modeling the system under consideration 2.3. Temperature-misfit strain phase diagrams for monodomain films 2.3.1. Phase diagram construction from the Landau-Ginzburg-Devonshire theory; 2.3.2. Calculations limitations; 2.4. Domain stability map; 2.4.1. Presentation and description of the framework of study; 2.4.2. Main contributions to the total energy of a film; 2.4.3. Influence of thickness; 2.4.4. Macroscopic elastic energy for each type of tetragonal domain; 2.4.5. Indirect interaction energy; 2.4.6. Domain

structures at equilibrium; 2.4.7. Domain stability map; 2.5. Temperature-misfit strain phase diagram for polydomain films  
2.6. Discussion of the nature of the "misfit strain" 2.6.1. Mechanical misfit strain; 2.6.2. Thermodynamic misfit strain; 2.6.3. As an illustration; 2.7. Conclusion; 2.8. Experimental validation of phase diagrams: state of the art; 2.9. Case study; 2.10. Results; 2.10.1. Evolution of the lattice parameters; 2.10.2. Associated stresses and strains; 2.11. Comparison between the experimental data and the temperature-misfit strain phase diagrams; 2.11.1. Thin film of PZT; 2.11.2. Thin layer of PbTiO<sub>3</sub>; 2.12. Conclusion; 2.13. Bibliography;  
Chapter 3. Deposition and Patterning Technologies  
3.1. Deposition method 3.1.1. Cathodic sputtering; 3.1.2. Ion beam sputtering; 3.1.3. Pulsed laser deposition; 3.1.4. The sol-gel process; 3.1.5. The MOCVD; 3.1.6. Molecular beam epitaxy; 3.2. Etching; 3.2.1. Wet etching; 3.2.2. Dry etching; 3.3. Contamination; 3.4. Monocrystalline thin-film transfer; 3.4.1. Smart Cut™ technology; 3.4.2. Bonding/thinning; 3.4.3. Interest in the material in a thin layer; 3.4.4. State of the art of the domain/applications; 3.4.5. An exemplary implementation; 3.5. Design of experiments; 3.5.1. The assumptions; 3.5.2. Reproducibility  
3.5.3. How can we reduce the number of experiments? 3.5.4. A DOE example: PZT RF magnetron sputtering deposition; 3.6. Conclusion; 3.7. Bibliography;  
Chapter 4. Analysis Through X-ray Diffraction of Polycrystalline Thin Films; 4.1. Introduction; 4.2. Some reminders of X-ray diffraction and crystallography; 4.2.1. Nature of X-rays; 4.2.2. X-ray scattering and diffraction; 4.3. Application to powder or polycrystalline thin-films; 4.4. Phase analysis by X-ray diffraction; 4.4.1. Grazing incidence diffraction; 4.4.2. De-texturing; 4.4.3. Quantitative analysis  
4.5. Identification of coherent domain sizes of diffraction and micro-strains

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## Sommario/riassunto

This book describes up-to-date technology applied to high-K materials for More Than Moore applications, i.e. microsystems applied to microelectronics core technologies. After detailing the basic thermodynamic theory applied to high-K dielectrics thin films including extrinsic effects, this book emphasizes the specificity of thin films. Deposition and patterning technologies are then presented. A whole chapter is dedicated to the major role played in the field by X-Ray Diffraction characterization, and other characterization techniques are also described such as Radio frequency characterizat

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