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| 1. Record Nr.           | UNINA9910141601203321  |
| Autore                  | Defay Emmanuel   |
| Titolo                  | Ferroelectric dielectrics integrated on silicon [[electronic resource] /] /<br>edited by Emmanuel Defay  |
| Pubbl/distr/stampa      | London, : ISTE Ltd.<br>Hoboken, N.J., : John Wiley, 2011   |
| ISBN                    | 1-118-60275-7<br>1-118-60276-5<br>1-118-60280-3  |
| Edizione                | [1st edition]  |
| Descrizione fisica      | 1 online resource (464 p.)   |
| Collana                 | ISTE   |
| Altri autori (Persone)  | DefayEmmanuel  |
| Disciplina              | 621.3815/2<br>621.38152  |
| Soggetti                | Ferroelectric thin films<br>Silicon - Electric properties<br>Electric batteries - Corrosion<br>Electronic books.   |
| 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<br>2.3. Temperature-misfit strain phase diagrams for monodomain films<br>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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| 2. Record Nr.           | UNISALENTO991000963909707536  |
| Autore                  | Shaw, Bernard   |
| Titolo                  | Candida : with illustrations from the play as presented by Cornelia Otis Skinner / Bernard Shaw |
| Pubbl/distr/stampa      | New York : Dodd, Mead and company, 1939   |
| Descrizione fisica      | 70 p. ; 22 cm.  |
| Altri autori (Persone)  | Skinner, Cornelia Otis  |
| Lingua di pubblicazione | Inglese   |
| Formato                 | Materiale a stampa  |
| Livello bibliografico   | Monografia  |