1. Record Nr. UNINA9910141573603321

Autore	Kaariainen Tommi
Titolo	Atomic layer deposition [[electronic resource]] : principles, characteristics, and nanotechnology applications / / Tommi Kaariainen ... [et al.]
Pubbl/distr/stampa	Hoboken, NJ, : John Wiley & Sons, c2013
ISBN	1-118-74740-2 1-118-74742-9 1-118-74738-0
Edizione	[2nd ed.]
Descrizione fisica	1 online resource (272 p.)
Altri autori (Persone)	CameronDavid <1949-> KaariainenMarja-Leena ShermanArthur <1931->
Disciplina	620/.5
Soggetti	Chemical vapor deposition Epitaxy Microelectronics Nanotechnology
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	Cover; Title Page; Copyright Page; Contents; Acknowledgements; Foreword; Preface; 1 Fundamentals of Atomic Layer Deposition; 1.1 Chemical Vapour Deposition; 1.1.1 Thermal CVD; 1.1.2 Plasma Enhanced CVD (PECVD); 1.2 Vapour Adsorption; 1.2.1 Physisorption; 1.2.2 Chemisorption; 1.3 Atomic Layer Deposition (ALD); 1.3.1 Thermal ALD Processes; 1.3.2 Radical Enhanced ALD (REALD); 1.3.3 Spatial ALD (SALD); References; 2 Elemental Semiconductor Epitaxial Films; 2.1 Epitaxial Silicon; 2.1.1 Dichlorosilane Processes; 2.1.2 Other Processes; 2.1.3 Epitaxial Germanium; References 3 III-V Semiconductor Films3.1 Gallium Arsenide; 3.1.1 Organometallic Precursors; 3.1.2 Halogen Precursors; 3.2 Other III-V Semiconductor Films; 3.3 Applications; 3.3.1 Photonic Structures; 3.3.2 Transistors; References; 4 Oxide films; 4.1 Introduction; 4.2 Aluminum Oxide; 4.2.1 Processes and Properties of Aluminum Oxide; 4.3 Titanium Dioxide; 4.3.1 Processes and Properties of TiO2; 4.4 Zinc Oxide; 4.4.1 Processes

and Properties of ZnO; 4.5 Zirconium Dioxide; 4.5.1 Processes and Properties of ZrO2; 4.6 Hafnium Dioxide; 4.6.1 Processes and Properties of HfO2; 4.7 Other Oxides; 4.7.1 Tin Oxide
4.7.2 Indium Oxide4.7.3 Tantalum Oxide; 4.8 Mixed Oxides and Nanolaminates; 4.8.1 Mixed Oxide Processes; 4.8.2 Nanolaminate Oxides; 4.9 Multilayers; References; 5 Nitrides and Other Compounds; 5.1 Introduction; 5.2 Nitrides; 5.2.1 Transition Metal Nitrides; 5.2.2 Group III Nitrides; 5.2.3 Group IV Nitrides; 5.2.4 Mixed Nitrides; 5.3 Chalcogenides; 5.4 Other Compounds; References; 6 Metals; 6.1 Introduction; 6.2 Noble Metals; 6.2.1 Silver Processes and Applications; 6.2.2 Ruthenium Processes and Applications; 6.2.3 Platinum and Palladium Processes and Applications
6.2.4 Rhrodium Processes and Applications6.2.5 Iridium Processes and Applications; 6.3 Titanium; 6.4 Tantalum; 6.5 Aluminum; 6.6 Copper; 6.7 Other Transition Metals; References; 7 Organic and Hybrid Materials; 7.1 Introduction; 7.2 Organic layers; 7.3 Hybrid Organic-inorganic Layers.; 7.4 Applications of Organic and Hybrid Films; References; 8 ALD Applications and Industry; 8.1 Introduction; 8.2 MEMS/NEMS; 8.3 Thin Film Magnetic Heads; 8.4 Coating Nanoparticles, Nanomaterials and Porous Objects; 8.5 Optical Coatings; 8.6 Thin Film Electroluminescent Displays; 8.7 Solar Cells
8.8 Anti-corrosion Layers8.9 Opportunities in Organic Electronics; 8.10 ALD Tool Manufacturers and Coating Providers; References; Index

Sommario/riassunto

Since the first edition was published in 2008, Atomic Layer Deposition (ALD) has emerged as a powerful, and sometimes preferred, deposition technology. The new edition of this groundbreaking monograph is the first text to review the subject of ALD comprehensively from a practical perspective. It covers ALD's application to microelectronics (MEMS) and nanotechnology; many important new and emerging applications; thermal processes for ALD growth of nanometer thick films of semiconductors, oxides, metals and nitrides; and the formation of organic and hybrid materials.