

1. Record Nr.	UNINA9910141238403321
Autore	Martin Peter M
Titolo	Introduction to surface engineering and functionally engineered materials // Peter M. Martin
Pubbl/distr/stampa	Salem, MA, : Scrivener Pub. Hoboken, NJ, : Wiley, c2011
ISBN	9786613282965 9781283282963 1283282968 9781118171882 1118171888 9781118171899 1118171896 9781118171868 1118171861
Descrizione fisica	1 online resource (586 p.)
Collana	Wiley-Scrivener
Classificazione	TEC021000
Disciplina	620/.44
Soggetti	Coatings Electronics - Materials Surfaces (Technology)
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	Introduction to Surface Engineering and Functionally Engineered Materials; Contents; Preface; 1 Properties of Solid Surfaces; 1.1 Introduction; 1.2 Tribological Properties of Solid Surfaces; 1.2.1 Wear; 1.2.2 Coefficient of Friction: Lubricity; 1.2.3 Hardness; 1.3 Optical Properties of Solid Surfaces; 1.4 Electric and Opto-electronic Properties of Solid Surfaces; 1.5 Corrosion of Solid Surfaces; References; 2 Thin Film Deposition Processes; 2.1 Physical Vapor Deposition; 2.1.1 Thermal and Electron Beam Evaporation; 2.1.2 Ion Treatments in Thin Film Deposition: Ion Assisted Deposition 2.1.3 Ion Plating 2.1.4 Planar Diode and Planar Magnetron Sputtering; 2.1.5 Unbalanced and Closed Field Magnetron Sputtering Processes;

2.1.6 Cylindrical and Rotating Magnetron Sputtering; 2.1.7 High Power Pulsed Magnetron Sputtering (HPPMS); 2.1.8 Dual Magnetron and Mid Frequency Sputtering; 2.1.9 Ion Beam Sputtering; 2.1.10 Filtered Cathodic Arc Deposition; 2.2 Chemical Vapor Deposition; 2.2.1 Basic Chemical Vapor Deposition (CVD); 2.2.2 Plasma Enhanced Chemical Vapor Deposition; 2.2.3 Atomic Layer Deposition (ALD); 2.3 Pulsed Laser Deposition; 2.4 Hybrid Deposition Processes
2.4.1 Vacuum Polymer Deposition 2.4.2 Magnetron-Based Hybrid Deposition Processes; References; 3 Thin Film Structure and Defects; 3.1 Thin Film Nucleation and Growth; 3.2 Structure of Thin Films; 3.2.1 Amorphous Thin Films; 3.2.2 Grain Growth in Thin Films; 3.2.3 Columnar Structures; 3.3 Thin Film Structure Zone Models; 3.3.1 Zone Structure Model Updates; References; 4 Thin Film Tribological Materials; 4.1 Hard and Ultrahard, Wear Resistant and Lubricous Thin Film Materials; 4.1.1 Titanium Based Thin Films; 4.1.2 Boron Nitride and Related Materials
4.1.3 Chromium Based Thin Film Materials: Chromium, Chromium Nitride, Titanium Nitride, and Titanium Carbide 4.1.4 Binary Carbon Based Thin Film Materials: Diamond, Hard Carbon and Amorphous Carbon; 4.1.5 Binary Carbon and Silicon Carbide Materials and Multilayers; 4.1.6 Tungsten Carbide, Molybdenum Sulfide, Silicon Nitride, and Aluminum Oxide; 4.1.7 Transparent Oxides and Nitrides; 4.1.8 Zirconium Dioxide and Ytria Stabilized Zirconium Dioxide; 4.2 Multifunctional Nanostructured, Nanolaminated, and Nanocomposite Tribological Materials; References; 5 Optical Thin Films and Composites 5.1 Optical Properties at an Interface 5.2 Single Layer Optical Coatings; 5.3 Multilayer Thin Film Optical Coatings; 5.3.1 Broad Band Antireflection Coatings; 5.3.2 High Reflectance Multilayer Coatings; 5.4 Color and Chromaticity in Thin Films; 5.4.1 Color in Thin Films and Solid Surfaces; 5.4.2 Color in Thin Films: Reflectance; 5.4.3 Color in Thin Films: Transmission; 5.5 Decorative and Architectural Coatings; References; 6 Fabrication Processes for Electrical and Electro-Optical Thin Films; 6.1 Plasma Processing: Introduction; 6.2 Etching Processes; 6.3 Wet Chemical Etching
6.4 Metallization

Sommario/riassunto

This book provides a clear and understandable text for users and developers of advanced engineered materials, particularly in the area of thin films, and addresses fundamentals of modifying the optical, electrical, photo-electric, tribological, and corrosion resistance of solid surfaces and adding functionality to solids by engineering their surface, structure, and electronic, magnetic and optical structure. Thin film applications are emphasized. Through the inclusion of multiple clear examples of the technologies, how to use them, and the synthesis processes involved, the reader will gain a de
