1. Record Nr. UNINA9910438055203321

Titolo	Ellipsometry at the nanoscale / / Maria Losurdo, Kurt Hingerl, editors
Pubbl/distr/stampa	Berlin ; ; New York, : Springer, c2013
ISBN	3-642-33956-5
Edizione	[1st ed. 2013.]
Descrizione fisica	1 online resource (740 p.)
Altri autori (Persone)	LosurdoMaria HingerlKurt
Disciplina	620.1/1295
Soggetti	Ellipsometry Polarimetry 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.
Nota di contenuto	Preamble -- Preface -- A Brief History and State of the Art of Ellipsometry.-Advanced Mueller Ellipsometry Instrumentation and Data Analysis -- Data Analysis for Nanomaterials: Effective Medium Approximation, its Limits and Implementations -- Relationship between Surface Morphology and Effective Medium Roughness -- Plasmonics and Effective-Medium Theory -- Thin films of Nanostructured Plasmonic Noble Metals.- Spectroscopic Ellipsometry on Metallic Gratings -- Mueller matrix applied to nanostructures -- Spectroscopic Ellipsometry and Magneto-Optical Kerr Spectroscopy of Magnetic Garnet Thin Films Incorporating Plasmonic Nanoparticles -- Generalized Ellipsometry Characterization of Sculptured Thin Films made by Glancing Angle Deposition -- THz Generalized Ellipsometry characterization of highly-ordered 3-dimensional Nanostructures -- Infrared ellipsometric investigations of free carriers and lattice vibrations in superconducting cuprates -- Real-time Ellipsometry for Probing charge-transfer processes at the nanoscale -- Polarimetric and other Optical Probes for the Solid - Liquid Interface -- Spectroscopic Ellipsometry for functional nano-layers of flexible organic electronic devices -- Spectroscopic Ellipsometry of Nanoscale Materials for Semiconductor Device Applications -- Ellipsometry of semiconductor nanocrystals -- Spectroscopic Ellipsometry for Inline Process Control in

the Semiconductor Industry -- Thin film applications in research and industry characterized by spectroscopic ellipsometry -- Ellipsometry and Correlation Measurements -- Nanotechnology: Applications and markets, present and future.

Sommario/riassunto

This book presents and introduces ellipsometry in nanoscience and nanotechnology making a bridge between the classical and nanoscale optical behaviour of materials. It delineates the role of the non-destructive and non-invasive optical diagnostics of ellipsometry in improving science and technology of nanomaterials and related processes by illustrating its exploitation, ranging from fundamental studies of the physics and chemistry of nanostructures to the ultimate goal of turnkey manufacturing control. This book is written for a broad readership: materials scientists, researchers, engineers, as well as students and nanotechnology operators who want to deepen their knowledge about both basics and applications of ellipsometry to nanoscale phenomena. It starts as a general introduction for people curious to enter the fields of ellipsometry and polarimetry applied to nanomaterials and progresses to articles by experts on specific fields that span from plasmonics, optics, to semiconductors and flexible electronics. The core belief reflected in this book is that ellipsometry applied at the nanoscale offers new ways of addressing many current needs. The book also explores forward-looking potential applications.