

1. Record Nr.	UNINA9910300378403321
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Titolo	Theoretical Concepts of X-Ray Nanoscale Analysis [[electronic resource]] : Theory and Applications // by Andrei Benediktovich, Ilya Feranchuk, Alexander Ulyanenkov
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2014
ISBN	3-642-38177-4
Edizione	[1st ed. 2014.]
Descrizione fisica	1 online resource (325 p.)
Collana	Springer Series in Materials Science, , 0933-033X ; ; 183
Disciplina	539.7222
Soggetti	Physical measurements Measurement Materials science Mathematical physics Physics Spectroscopy Microscopy Measurement Science and Instrumentation Characterization and Evaluation of Materials Theoretical, Mathematical and Computational Physics Applied and Technical Physics Spectroscopy and Microscopy
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	Basic principles of the interaction between X-rays and matter -- X-ray reflectivity -- High-resolution X-ray diffraction -- Grazing-incidence small-angle X-ray scattering -- Theory of X-ray scattering from imperfect crystals -- X-ray diffraction for evaluation of residual stresses in polycrystals -- Methods of mathematical and physical optimization of X-ray data analysis.
Sommario/riassunto	This book provides a concise survey of modern theoretical concepts of X-ray materials analysis. The principle features of the book are: basics of X-ray scattering, interaction between X-rays and matter and new

theoretical concepts of X-ray scattering. The various X-ray techniques are considered in detail: high-resolution X-ray diffraction, X-ray reflectivity, grazing-incidence small-angle X-ray scattering and X-ray residual stress analysis. All the theoretical methods presented use the unified physical approach. This makes the book especially useful for readers learning and performing data analysis with different techniques. The theory is applicable to studies of bulk materials of all kinds, including single crystals and polycrystals as well as to surface studies under grazing incidence. The book appeals to researchers and graduate students alike.
