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Thin Film Analysis by X-Ray Scattering

Techniques for Structural Characterization

With contributions by Paul F. Fewster and Christoph Genzel While X-ray diffraction investigation of powders and polycrystalline matter was at the forefront of materials science in the 1960s and 70s, high-tech applications at the beginning of the 21st century are driven by the materials science of thin films. Very much an interdisciplinary field, chemists, biochemists, materials scientists, physicists and engineers all have a common interest in thin films and their manifold uses and applications. Grain size, porosity, density, preferred orientation and other properties are important to know: whether thin films fulfill their intended function depends crucially on their structure and morphology once a chemical composition has been chosen. Although their backgrounds differ greatly, all the involved specialists a profound understanding of how structural properties may be determined in order to perform their respective tasks in search of new and modern materials, coatings and functions. The author undertakes this in-depth introduction to the field of thin film X-ray characterization in a clear and precise manner.

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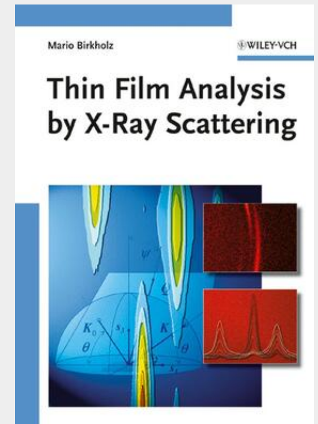

169,00 €
157,94 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9783527310524
Medium: Buch
ISBN: 978-3-527-31052-4
Verlag: Wiley VCH Verlag GmbH
Erscheinungstermin: 15.11.2005
Sprache(n): Englisch
Auflage: 1. Auflage 2005
Produktform: Gebunden
Gewicht: 850 g
Seiten: 356
Format (B x H): 180 x 248 mm